Treatment Protocol: CARDIAC DYSRHYTHMIA - BRADYCARDIA **Ref. No. 1212-P**

Base Hospital Contact: Required for all patients with symptomatic bradycardia

1. Assess patient's airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. If foreign body suspected, perform direct laryngoscopy for foreign body removal and treat in conjunction with *TP 1234-P, Airway Obstruction*

3. Administer **Oxygen** prn *(MCG 1302)*
   High-flow Oxygen 15L/min for poor perfusion ❶

4. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if dysrhythmia suspected prn

5. For poor perfusion:
   Begin bag-mask-ventilation (BMV) ❶❷

6. Establish vascular access prn *(MCG 1375)*

7. For persistent poor perfusion:
   Begin chest compressions if bradycardia (< 60 bpm) persists
   Epinephrine (0.1mg/1mL) 0.01mg/kg slow IV/IO push, dose per *MCG 1309*
   Repeat every 3-5 min
   CONTACT BASE for Physician Consultation concurrent with above treatment

8. If suspected AV Block or patient unresponsive to epinephrine: ❸
   Atropine (0.1mg/mL) 0.02 mg/kg IV/IO push, dose per *MCG 1309*
   May repeat x1 in 5 min

9. Consider **Transcutaneous Pacing (TCP)** for HR ≤ 40 with continued poor perfusion *(MCG 1365)*
   For infants and young children place pacing pads anterior and posterior chest; for older children place as per adult patients ❹
   Recommended initial settings: rate 70bpm/0mA, slowly increase mAs until capture is achieved
   CONTACT BASE concurrent with initiation of TCP

   If TCP will be utilized for the awake patient, consider sedation and analgesia
   For sedation:
   Midazolam (5mg/mL) 0.1mg/kg IM/IN/IV/IO, dose per *MCG 1309*
   Repeat x1 in 2 min prn, maximum two doses prior to Base contact
   For pain management:
   Fentanyl (50mcg/mL) 1mcg/kg slow IV/IO push or IM, dose per *MCG 1309*
   Fentanyl (50mcg/mL) 1.5mcg/kg IN, dose per *MCG 1309*
   Repeat in 5 min prn x1, maximum 2 total doses prior to Base contact
   Morphine (4mg/mL) 0.1mg/kg slow IV/IO push or IM, dose per *MCG 1309*
   Repeat in 5 min prn x1, maximum 2 total doses prior to Base

   CONTACT BASE for additional sedation and/or pain management after maximum dose administered:
   May repeat Midazolam, and/ or Fentanyl or Morphine as above maximum 4 total doses

10. For nausea or vomiting in patients ≥ 4 years old:
    Ondansetron 4mg ODT

11. For signs of poor perfusion with HR > 40:
    Normal Saline 20mL/kg IV/IO rapid infusion per *MCG 1309*

12. For suspected overdose, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion*

SPECIAL CONSIDERATIONS

1. Management of oxygenation and ventilation is most important aspect of treatment of bradycardia in children. Squeeze the bag mask device just until chest rise is initiated and then release; state "Squeeze, Release, Release" to prevent hyperventilation

2. Young athletes, typically adolescents may have normal resting heart rates < 60 bpm, treat only if signs of poor perfusion.

3. Potential causes of unresponsiveness to epinephrine in children include increased intracranial pressure, beta blocker/calcium channel overdose, hypothyroidism, infection, congenital heart disease, and sleep apnea where administration of atropine could be of theoretical benefit.

4. There are minimal data on the use of TCP in infants and children in the out-of-hospital setting. Patients unresponsive to BMV and epinephrine may be candidates. Base Physician consultation is recommended in these patients.